UNITED STATES PATENT AND TRADEMARK OFFICE

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10/809,996	03/26/2004	Ranganathan Krishnan	040214/QUALP842US	8494

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EXAMINER
REGO, DOMINIC E

ART UNIT	PAPER NUMBER
2618	

NOTIFICATION DATE	DELIVERY MODE
07/19/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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	Application No.	Applicant(s)
Office Action Summary	10/809,996	KRISHNAN ET AL.
	Examiner	Art Unit	
	DOMINIC E. REGO	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on _04 May 2010_.

2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1,3-20,22-39 and 41-48_ is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) _1,3-20,22-39 and 41-47_ is/are rejected.

7) ☒ Claim(s) _48_ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a) ☐ All   b) ☐ Some * c) ☐ None of:

   1. ☐ Certified copies of the priority documents have been received.

   2. ☐ Certified copies of the priority documents have been received in Application No. _____.

   3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _06/01/10, 05/04/10, and 02/03/10_.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____ .

DETAILED ACTION

1.   This communication is responsive to the application filed on May 04, 2010.

Claims 1,3-20,22-39,41-48 are pending and presented for prosecution.

Claims 1, 20 and 39 have been amended.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3.   Claims 1,3-6,8-11,13-16,18-20, 22-25,27-30,32-35,37-39, 41-43, and 46-47 are

rejected under 35 U.S.C. 103(a) as being unpatentable over Gandolfo (US Patent

#7,184,767) in view of Choi (US Patent #6,967,944).

Regarding claim 1, Gandolfo teaches a method of communications from a

piconet (Figure 6C), comprising: by an edge terminal of the piconet *(Fig. 6C, by an edge*

terminal 522a or 522b of the piconet),

engaging in intra-piconet communications *(Figure 6C, engaging in intra-piconet*

communications between device A2-522a and B2-522b; Col 11, lines 47-58: Gandolfo

teaches in FIG. 6C, device A-2 522a in network A 505a is controller-enabled (i.e., it is

capable of becoming a controller). And when device A-2 522a forms a child network, the

usable physical area 560a of that child network is large enough to contain device B-2

522b. Similarly, if device B-2 522b in network B 505b were also controller-enabled (i.e.,

capable of becoming a controller), then it could form a child network whose usable

physical area 560b was large enough to contain device A-2 522a. Regardless of which

device 522a, 522b created the child network, the two devices 522a and 522b

communicate with each other via a child wireless links 590, so devices 522a and 522b

engaging in intra-piconet communication);

receiving a pilot signal from a foreign terminal outside the piconet *(Col 11, lines*

55-58: Regardless of which device 522a, 522b created the child network, the two

devices 522a and 522b communicate with each other via a child wireless links 590. In

abstract, Gandolfo teaches if they have indirect overlap (Fig 6C), one device from each

network will together in a child network, and the controllers will pass the network

information via the devices in this child network. That means when controller 510a

detects that receiving pilot signal from device 522b is below the threshold, establishing

a peer-to-peer(ad-hoc) connection with its edge terminal 522a with the foreign terminal

522b in order to exchange messages. If device 522b is within the cell 550a, signal

strength would be higher than threshold and communication would be normal. Since

device 522b located outside the cell 550a, receiving signal strength of the pilot signal

by controller 510a would be less than threshold, so either devices 522a and 522b form

child network and establish peer-to-peer (ad-hoc) connection with each other in order to

exchange messages from network 550a to 550b or vice versa);

determining strength of the pilot signal (*In abstract, Gandolfo teaches if they have indirect overlap (Fig 6C), one device from each network will together in a child network, and the controllers will pass the network information via the devices in this child network. That means when controller 510a detects that receiving pilot signal from device 522b is below the threshold, establishing a peer-to-peer (ad-hoc) connection with its edge terminal 522a with the foreign terminal 522b in order to exchange messages. If device 522b is within the cell 550a, signal strength would be higher than threshold and communication would be normal. Since device 522b outside the cell 550a, receiving signal strength of the pilot signal by controller 510a is less than threshold, so either devices 522a and 522b form child network and establish peer-to-peer(ad-hoc) connection with each other in order to exchange messages from network 550a to 550b or vice versa);*

exchanging messages with the foreign terminal if the pilot signal is below the threshold (*Col 11, lines 47-58: Gandolfo teaches regardless of which device 522a, 522b created the child network, the two devices 522a and 522b communicate with each other via a child wireless links 590, means exchanging messages with the foreign terminal. In another word, when device 522b located outside the cell 550a, receiving signal strength of the pilot signal by controller 510a would be less than threshold, so either devices 522a and 522b form child network and establish peer-to-peer (ad-hoc) connection with each other in order to exchange messages from network 550a to 550b or vice versa);*

establishing a peer-to-peer (ad-hoc) connection with the foreign terminal (*Col 11, lines 47-58: Gandolfo teaches regardless of which device 522a, 522b created the child*

network, the two devices 522a and 522b communicate with each other via a child

wireless links 590. In abstract, Gandolfo teaches if they have indirect overlap (Fig 6C),

one device from each network will together in a child network, and the controllers will

pass the network information via the devices in this child network. That means when

controller 510a detects that receiving pilot signal from device 522b is below the

threshold, establishing a peer-to-peer (ad-hoc) connection with its edge terminal 522a

with the foreign terminal 522b in order to exchange messages).

Although, Gandolfo doesn't clearly specify in the disclosure "exchanging

messages with the foreign terminal if the pilot signal is below the threshold", but the

reason for forming child network and engaging peer-to-peer (ad-hoc) communication is

to when the controller 510a (master terminal) could not connected with device B-2 522b

because device B-2 522b is located outside the cell 550a, so the pilot signal strength

must be less than threshold and by forming peer-to-peer (ad-hoc) connection with it's

edge terminal 522a with the remote or the foreign terminal 522b will able to engage

communication with each other.

However, in related art, Choi, Col 5, lines 9-31, teaches the AP 14 updates the

table to reflect the received signal strength level for each active STA then newly

allocates time allocation for all STAs. Based on the updated information, the AP 14 can

determine which stations are hidden from each other. If the received signal quality

degrades below a set limit, a subsequent frame message from the AP 14 to the active

STAs is transmitted to designate time allocation for multiple peer-to-peer (ad-hoc)

transmissions. Therefore, it would have been obvious to one of ordinary skill in the art at

the time of the invention to provide the above teaching of Choi to Gandolfo, in order to

have peer-to-peer (ad-hoc) communication with the foreign terminal, so that the data

can be transmitted constantly without deteriorating.

Regarding claims 3 and 22, the combination of Gandolfo and Choi teach all the

claimed elements in claims 1 and 20. In addition, Gandolfo teaches the method wherein

the exchanged messages comprise a transmission to the foreign terminal including a list

of a plurality of terminals in the piconet *(Col 11, line 20-Col 12, line 63, especially Col*

12, lines 56-63, Gandolfo teaches each controller 510a, 510b will then be responsible

for transmitting a broadcast message (beacon or other transmission) at a regular

interval (e.g., every second or two). This broadcast message should include a list of all

the devices that are associated to it, the type of service provided by each one of its

associated devices, as well as some additional information such as supported data rate,

available wired connections to the outside world, and other fields as needed).

Regarding claims 4 and 23, the combination of Gandolfo and Choi teach all the

claimed elements in claims 3 and 22. In addition, Gandolfo teaches the method wherein

the foreign terminal is a member of a remote piconet *(See fig 6C, foreign terminal 522b*

is a member of a remote piconet 550b), and wherein the exchanged messages

comprise receiving from the foreign terminal a list of a plurality of terminals in the

remote piconet *(Col 11, line 20-Col 12, line 63, especially Col 12, lines 56-63, Gandolfo*

teaches each controller 510a, 510b will then be responsible for transmitting a broadcast

message (beacon or other transmission) at a regular interval (e.g., every second or

two). This broadcast message should include a list of all the devices that are associated

to it, the type of service provided by each one of its associated devices, as well as some

additional information such as supported data rate, available wired connections to the

outside world, and other fields as needed).

Regarding claims 5 and 24, the combination of Gandolfo and Choi teach all the

claimed elements in claims 4 and 23. In addition, Gandolfo teaches the method further

comprising mapping the list of terminals in the remote piconet to the foreign terminal

(Col 11, line 20-Col 12, line 63, especially Col 12, lines 56-63, *Gandolfo teaches each*

controller 510a, 510b will then be responsible for transmitting a broadcast message

(beacon or other transmission) at a regular interval (e.g., every second or two). This

broadcast message should include a list of all the devices that are associated to it, the

type of service provided by each one of its associated devices, as well as some

additional information such as supported data rate, available wired connections to the

outside world, and other fields as needed).

Regarding claims 6 and 25, the combination of Gandolfo and Choi teach all the

claimed elements in claim 1 and 20. In addition, Gandolfo teaches the method wherein

the establishment of the peer-to-peer (Col 5, lines 20-24) connection comprises

negotiating a data rate and transmission power level (Col 12, lines 12-20, lines 56-63).

Regarding claims 8 and 27, the combination of Gandolfo and Choi teach all the

claimed elements in claim 1 and 20. In addition, Gandolfo teaches the method further

comprising listening for a transmission from the foreign terminal when not engaged in

the intra-piconet communications *(Figure 6C, Gandolfo teaches element 522a listening*

for a transmission from the foreign terminal 522b when not engaged in the intra-piconet

communication (Col 11, lines 20-58; Col 12, lines 12-20, lines 56-63, especially Col 12,

lines 12-20 teaches regardless of the type of overlap, while associated in a network

505a, 505b, each device 521a 523a, 521b 522b should periodically be forced by its

controller 510a, 510b to scan (listen) other channels to determine if a better controller

is available, e.g., one with more available bandwidth, with a better QoS, with a better

link quality, or with a lower transmit power). Devices should also periodically be forced

by its controller 510a, 510b to look (scan or listen) for adjacent networks and assume a

proxy role with those networks if possible).

Regarding claims 9 and 28, the combination of Gandolfo and Choi teach all the

claimed elements in claims 8 and 20. In addition, Gandolfo teaches the method wherein

the transmission is received while listening for it, the method further comprising

forwarding the received transmission to a terminal within the piconet *Col 11, lines 20-58;*

Col 12, lines 12-20, lines 56-63, especially Col 12, lines 12-20 teaches regardless of

the type of overlap, while associated in a network 505a, 505b, each device 521a 523a,

521b 522b should periodically be forced by its controller 510a, 510b to scan (listen)

other channels to determine if a better controller is available, e.g., one with more

available bandwidth, with a better QoS, with a better link quality, or with a lower transmit

power). Devices should also periodically be forced by its controller 510a, 510b to look

(scan or listen) for adjacent networks and assume a proxy role with those networks if

possible).

Regarding claims 10 and 29, the combination of Gandolfo and Choi teach all

the claimed elements in claims 9 and 28. In addition, Gandolfo teaches the method

further comprising receiving instructions to engage in the intra-piconet communications

during a first time period and to forward the received transmission to the terminal in a

second time period (Col 11, lines 20-58; Col 12, lines 56-67).

Regarding claims 11 and 30, the combination of Gandolfo and Choi teach all

the claimed elements in claims 10 and 29. In addition, Gandolfo teaches the method

wherein the first time period is different from the second time period (Col 11, lines 20-

58; Col 12, lines 56-67).

Regarding claims 13 and 32, the combination of Gandolfo and Choi teach all

the claimed elements in claims 9 and 28. In addition, Gandolfo teaches the method

further comprising providing feedback to the foreign terminal acknowledging that the

transmission from the foreign terminal was received (Col 5, lines 43-51; Col 11, lines

47-58; and Col 13, lines 24-42, especially, Col 13, lines 24-42).

Regarding claims 14 and 33, the combination of Gandolfo and Choi teach all

the claimed elements in claims 1 and 20. In addition, Gandolfo teaches the method

further comprising receiving a transmission from a terminal within the piconet, and

forwarding the received transmission to the foreign terminal (Col 11, lines 47-58).

Regarding claims 15 and 34, the combination of Gandolfo and Choi teach all

the claimed elements in claims 14 and 33. In addition, Gandolfo teaches the method

further comprising receiving instructions to engage in the intra-piconet communications

during a first time period *(Figure 6C, receiving instructions to engage in the intra-piconet*

communications during a first period from controller 510a in view of device A2 522a),

receiving the transmission from the terminal in a second time period *(Figure 6C,*

receiving the transmission from the terminal A2-522a in a second time period), and

forwarding the received transmission to the foreign terminal in a third time period

(*Figure 6C, forwarding the received transmission to the foreign terminal B2-522b in a*

third time period; Col 11, line 46-Col 12, line 20).

Regarding claims 16 and 35, the combination of Gandolfo and Choi teach all

the claimed elements in claims 15 and 34. In addition, Gandolfo teaches the method

wherein the first, second and third time period are all different from one another (Col 11,

line 46-Col 12, line 20).

Regarding claims 18 and 37, the combination of Gandolfo and Choi teach all

the claimed elements in claims 14 and 33. In addition, Gandolfo teaches the method

further comprising receiving feedback from the foreign terminal indicating that the

received transmission forwarded to the foreign terminal was received by the foreign

terminal (Col 11, line 46-Col 12, line 20; Col 12, lines 56-63, especially, Col 12, lines 56-

63).

Regarding claims 19 and 38, the combination of Gandolfo and Choi teach all

the claimed elements in claim 14 and 33. In addition, Gandolfo teaches the method

wherein the forwarding of the received transmission to the foreign terminal comprises

transmitting the received transmission to the foreign terminal a plurality of times (Col 11,

line 46-Col 12, line 20).

Regarding claim 20, Gandolfo teaches a communications terminal configured to

operate in a piconet (Figure 6C), comprising:

a receiver configured to, operating as a component of an edge terminal of the

piconet *(Fig. 6C, operating as a component of an edge terminal 522a or 522b of the*

piconet), detect a pilot signal from a foreign terminal outside the piconet and determine

its strength *(Col 11, lines 55-58: Regardless of which device 522a, 522b created the*

child network, the two devices 522a and 522b communicate with each other via a child

wireless links 590. In abstract, Gandolfo teaches if they have indirect overlap (Fig 6C),

one device from each network will together in a child network, and the controllers will

pass the network information via the devices in this child network. That means when

controller 510a detects that receiving pilot signal from device 522b is below the

threshold, establishing a peer-to-peer connection with its edge terminal 522a with the

foreign terminal 522b in order to exchange messages. If device 522b is inside the cell

550a, signal strength would be higher than threshold and communication would be

normal. Since device 522b located outside the cell 550a, receiving signal strength of the

pilot signal by controller 510a would be less than threshold, so either devices 522a and

522b form child network and establish peer-to-peer connection with each other in order

to exchange messages from network 550a to 550b or vice versa);

a controller configured to, operating as another component of the edge terminal

(Fig. 6C, edge terminals 522a or 522b inherently has controller which configured to

exchange message) of the piconet, exchange message with the foreign terminal *(Col*

11, lines 47-58: Gandolfo teaches regardless of which device 522a, 522b created the

child network, the two devices 522a and 522b communicate with each other via a child

wireless links 590. See Fig 6C, controller 510a configured to exchange message

through it's edge terminal 522a with the foreign terminal 522b) to facilitate establishing a

peer-to-peer connection with the foreign terminal if the pilot signal strength is below a

threshold *(Col 11, lines 47-58: Gandolfo teaches regardless of which device 522a, 522b*

created the child network, the two devices 522a and 522b communicate with each other

via a child wireless links 590, means exchanging messages with the foreign terminal. In

another word, when device 522b located outside the cell 550a, receiving signal strength

of the pilot signal by controller 510a would be less than threshold, so either devices

522a and 522b form child network and establish peer-to-peer connection with each

other in order to exchange messages from network 550a to 550b or vice versa),

the controller further being configured to support intra-piconet communications

(Figure 6C, engaging in intra-piconet communications between device A2-522a and B2-

522b; Col 11, lines 47-58: Gandolfo teaches in FIG. 6C, device A-2 522a in network A

505a is controller-enabled (i.e., it is capable of becoming a controller). And when device

A-2 522a forms a child network, the usable physical area 560a of that child network is

large enough to contain device B-2 522b. Similarly, if device B-2 522b in network B

505b were also controller-enabled (i.e., capable of becoming a controller), then it could

form a child network whose usable physical area 560b was large enough to contain

device A-2 522a. Regardless of which device 522a, 522b created the child network, the

two devices 522a and 522b communicate with each other via a child wireless links 590,

so devices 522a and 522b engaging in intra-piconet communication. Further in abstract,

Gandolfo teaches if they have indirect overlap (Fig 6C), one device from each network

will together in a child network, and the controllers will pass the network information via

the devices in this child network. That means when controller 510a detects that

receiving pilot signal from device 522b is below the threshold, establishing a peer-to-

peer connection with its edge terminal 522a with the foreign terminal 522b in order to

exchange messages. If device 522b is inside the cell 550a, signal strength would be

higher than threshold and communication would be normal. Since device 522b outside

the cell 550a, receiving signal strength of the pilot signal by controller 510a should be

less than threshold and this is the reason device 522a and 522b form peer-to-peer

connection in order to transfer or exchange messages from network 550a to 550b or

vice versa).

Although, Gandolfo doesn't clearly specify in the disclosure "exchanging

messages with the foreign terminal if the pilot signal is below the threshold", but the

reason for forming child network and engaging peer-to-peer (ad-hoc) communication is

to when the controller 510a (master terminal) could not connected with device B-2 522b

because device B-2 522b is located outside the cell 550a, so the pilot signal strength

must be less than threshold and by forming peer-to-peer (ad-hoc) connection with it's

edge terminal 522a with the remote or the foreign terminal 522b will able to engage

communication with each other.

However, related art, Choi, Col 5, lines 9-31, teaches the AP 14 updates the

table to reflect the received signal strength level for each active STA then newly

allocates time allocation for all STAs. Based on the updated information, the AP 14 can

determine which stations are hidden from each other. If the received signal quality

degrades below a set limit, a subsequent frame message from the AP 14 to the active

STAs is transmitted to designate time allocation for multiple peer-to-peer transmissions.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the

invention to provide the above teaching of Choi to Gandolfo, in order to have peer-to-

peer communication with the foreign terminal, so that the data can be transmitted

constantly without deteriorating.

Regarding claim 39, Gandolfo teaches a communications terminal configured to

operate in a piconet (Figure 6C), comprising:

means for, operating as a component of an edge terminal of the piconet *(Fig. 6C,*

operating as a component of an edge terminal 522a or 522b of the piconet), detecting

a pilot signal from a foreign terminal outside the piconet *(Col 11, lines 55-58:*

Regardless of which device 522a, 522b created the child network, the two devices 522a

and 522b communicate with each other via a child wireless links 590. In abstract,

Gandolfo teaches if they have indirect overlap (Fig 6C), one device from each network

will together in a child network, and the controllers will pass the network information via

the devices in this child network. That means when controller 510a detects that

receiving pilot signal from device 522b is below the threshold, establishing a peer-to-

peer connection with its edge terminal 522a with the foreign terminal 522b in order to

exchange messages. If device 522b is inside the cell 550a, signal strength would be

higher than threshold and communication would be normal. Since device 522b located

outside the cell 550a, receiving signal strength of the pilot signal by controller 510a

would be less than threshold, so either devices 522a and 522b form child network and

establish peer-to-peer connection with each other in order to exchange messages from

network 550a to 550b or vice versa) and determining the strength of the detected pilot

signal (*In abstract, Gandolfo teaches if they have indirect overlap (Fig 6C), one device*

from each network will together in a child network, and the controllers will pass the

network information via the devices in this child network. That means when controller

510a detects that receiving pilot signal from device 522b is below the threshold,

establishing a peer-to-peer connection with its edge terminal 522a with the foreign

terminal 522b in order to exchange messages. If device 522b is within the cell 550a,

signal strength would be higher than threshold and communication would be normal.

Since device 522b outside the cell 550a, receiving signal strength of the pilot signal by

controller 510a is less than threshold, so either devices 522a and 522b form child

network and establish peer-to-peer connection with each other in order to exchange

messages from network 550a to 550b or vice versa);

means for, operating as another component of the edge terminal of the piconet,

exchanging messages with the foreign terminal *(Col 11, lines 47-58: Gandolfo teaches*

regardless of which device 522a, 522b created the child network, the two devices 522a

and 522b communicate with each other via a child wireless links 590. See Fig 6C,

controller 510a configured to exchange message through it's edge terminal 522a with

the foreign terminal 522b) to facilitate establishing a peer-to-peer connection with the

foreign terminal if the pilot signal strength is below a threshold *(Col 11, lines 47-58:*

Gandolfo teaches regardless of which device 522a, 522b created the child network, the

two devices 522a and 522b communicate with each other via a child wireless links 590,

means exchanging messages with the foreign terminal. In another word, when device

522b located outside the cell 550a, receiving signal strength of the pilot signal by

controller 510a would be less than threshold, so either devices 522a and 522b form

child network and establish peer-to-peer connection with each other in order to

exchange messages from network 550a to 550b or vice versa); and

      means for supporting intra-piconet communications *(Figure 6C, engaging in intra-*

piconet communications between device A2-522a and B2-522b; Col 11, lines 47-58:

Gandolfo teaches in FIG. 6C, device A-2 522a in network A 505a is controller-enabled

(i.e., it is capable of becoming a controller). And when device A-2 522a forms a child

network, the usable physical area 560a of that child network is large enough to contain

device B-2 522b. Similarly, if device B-2 522b in network B 505b were also controller-

enabled (i.e., capable of becoming a controller), then it could form a child network

whose usable physical area 560b was large enough to contain device A-2 522a.

Regardless of which device 522a, 522b created the child network, the two devices 522a

and 522b communicate with each other via a child wireless links 590, so devices 522a

and 522b engaging in intra-piconet communication),

      Although, Gandolfo doesn't clearly specify in the disclosure "exchanging

messages with the foreign terminal if the pilot signal is below the threshold", but the

reason for forming child network and engaging peer-to-peer (ad-hoc) communication is

to when the controller 510a (master terminal) could not connected with device B-2 522b

because device B-2 522b is located outside the cell 550a, so the pilot signal strength

must be less than threshold and by forming peer-to-peer (ad-hoc) connection with it's

edge terminal 522a with the remote or the foreign terminal 522b will able to engage communication with each other.

However, related art, Choi, Col 5, lines 9-31, teaches the AP 14 updates the table to reflect the received signal strength level for each active STA then newly allocates time allocation for all STAs. Based on the updated information, the AP 14 can determine which stations are hidden from each other. If the received signal quality degrades below a set limit, a subsequent frame message from the AP 14 to the active STAs is transmitted to designate time allocation for multiple peer-to-peer transmissions. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the above teaching of Choi to Gandolfo, in order to have peer-to-peer communication with the foreign terminal, so that the data can be transmitted constantly without deteriorating.

Regarding claim 41, the combination of Gandolfo and Choi teaches all the claimed elements in claim 1. In addition, Gandolfo teaches the method, wherein engaging in intra-piconet communications further comprises: receiving a pilot signal from a master terminal; determining that the strength of the pilot signal from the master terminal is below a threshold; and transmitting a pilot signal (Col 5, lines 20-41 and *Col 11, lines 47-58: Gandolfo teaches regardless of which device 522a, 522b created the child network, the two devices 522a and 522b communicate with each other via a child wireless links 59. In abstract, Gandolfo teaches if they have indirect overlap (Fig 6C), one device from each network will together in a child network, and the controllers will pass the network information via the devices in this child network. That means device*

522b receives a pilot signal from a controller 510a or a master terminal wherein device

522b located outside the cell 550a, receiving signal strength of the pilot signal by

controller 510a would be less than threshold, so either devices 522a and 522b form

child network and establish peer-to-peer connection with each other in order to

exchange messages from network 550a to 550b or vice versa);

establishing a new piconet in response to a foreign terminal requesting

synchronous communication (*Col 11, lines 47-58: Gandolfo teaches regardless of which*

device 522a, 522b created the child network, the two devices 522a and 522b

communicate with each other via a child wireless links 590, so establishing a new

piconet in response to a foreign terminal requesting synchronous communication).

Regarding claim 42, the combination of Gandolfo and Choi teach all the claimed

elements in claim 1. In addition, Choi teaches the communications terminal, wherein the

receiver is further configured to detect a pilot signal from a master terminal and

determine its strength, and the controller is further configured to transmit a pilot signal if

the pilot signal from the master terminal strength is below a threshold Col 5, lines 20-41

and *Col 11, lines 47-58: Gandolfo teaches regardless of which device 522a, 522b*

created the child network, the two devices 522a and 522b communicate with each other

via a child wireless links 59. In abstract, Gandolfo teaches if they have indirect overlap

(Fig 6C), one device from each network will together in a child network, and the

controllers will pass the network information via the devices in this child network. That

means device 522b receives a pilot signal from a controller 510a or a master terminal

wherein device 522b located outside the cell 550a, receiving signal strength of the pilot

signal by controller 510a would be less than threshold, so either devices 522a and

522b form child network and establish peer-to-peer connection with each other in order

to exchange messages from network 550a to 550b or vice versa).

Regarding claim 43, the combination of Gandolfo and Choi teach all the

claimed elements in claim 42. In addition, Choi teaches the communications terminal,

wherein the controller is further configured to establish a new piconet in response to a

foreign terminal requesting synchronous communication (*Col 11, lines 47-58: Gandolfo*

teaches regardless of which device 522a, 522b created the child network, the two

devices 522a and 522b communicate with each other via a child wireless links 590, so

establishing a new piconet in response to a foreign terminal requesting synchronous

communication).

Regarding claim 46, Gandolfo teaches a communication device configured to:

from a master terminal (Fig 6C, item 510a) of a piconet, receive a designation as

an edge terminal (Fig 6C, device 522a) in the piconet *(Fig 6C, from a master terminal*

510a of a piconet, receive a designation as an edge terminal 522a in the piconet);

based on being designated an edge terminal 522a (Fig 6C), listen for pilot signals

from isolated terminals 522b not included in the piconet 550a *(Col 11, lines 47-58:*

Gandolfo teaches regardless of which device 522a, 522b created the child network, the

two devices 522a and 522b communicate with each other via a child wireless links 590.

In abstract, Gandolfo teaches if they have indirect overlap (Fig 6C), one device from

each network will together in a child network, and the controllers will pass the network

information via the devices in this child network. That means when controller 510a

detects that receiving pilot signal from device 522b is below the threshold, establishing

a peer-to-peer connection with it's edge terminal 522a with the foreign terminal 522b in

order to exchange messages) ;

if a pilot signal with a signal strength below a threshold is detected from an

isolated terminal 522b, add the isolated terminal 522b to a peer-to-peer connectivity list

(Col 11, lines 47-58: Gandolfo teaches regardless of which device 522a, 522b created

the child network, the two devices 522a and 522b communicate with each other via a

child wireless links 590, means exchanging messages with the foreign terminal. In

another word, when device 522b, an isolated terminal which is located outside the cell

550a receiving signal strength less than threshold, so either devices 522a and 522b

form child network and establish peer-to-peer connection with each other in order to

exchange messages from network 550a to 550b or vice versa), the peer-to-peer

connectivity list identifying terminals outside the piconet that may be reached with peer-

to-peer transmission *(Col 11, lines 47-58: Gandolfo teaches regardless of which device*

522a, 522b created the child network, the two devices 522a and 522b communicate

with each other via a child wireless links 590. In abstract, Gandolfo teaches if they have

indirect overlap (Fig 6C), one device from each network will together in a child network,

and the controllers will pass the network information via the devices in this child

network. That means when controller 510a detects that receiving pilot signal from

device 522b is below the threshold, establishing a peer-to-peer connection with it's edge

terminal 522a with the foreign terminal 522b in order to exchange messages); and

route a call from the isolated terminal 522b (fig 6C) to a far-end terminal 522a of

the piconet 550a _(In abstract, Gandolfo teaches if they have indirect overlap (Fig 6C),

one device from each network will together in a child network, and the controllers will

pass the network information via the devices in this child network. That means when

controller 510a detects that receiving pilot signal from device 522b is below the

threshold, establishing a peer-to-peer connection with it's edge terminal 522a with the

isolated terminal 522b in order to exchange messages or routing a call), based on being

included in a peer-to-peer (Col 5, lines 20-24: ad-hoc network which same as peer-to-

peer network) connectivity list of the isolated terminal identifying each known edge

terminal of the piconet (Col 11, line 20-Col 12, line 63, especially Col 12, lines 56-63).

Although, Gandolfo doesn't clearly specify in the disclosure "exchanging

messages with the foreign terminal if the pilot signal is below the threshold", but the

reason for forming child network and engaging peer-to-peer (ad-hoc) communication is

to when the controller 510a (master terminal) could not connected with device B-2 522b

because device B-2 522b is located outside the cell 550a, so the pilot signal strength

must be less than threshold and by forming peer-to-peer (ad-hoc) connection with it's

edge terminal 522a with the remote or the foreign terminal 522b will able to engage

communication with each other.

However, related art, Choi, Col 5, lines 9-31, teaches the AP 14 updates the

table to reflect the received signal strength level for each active STA then newly

allocates time allocation for all STAs. Based on the updated information, the AP 14 can

determine which stations are hidden from each other. If the received signal quality

degrades below a set limit, a subsequent frame message from the AP 14 to the active

STAs is transmitted to designate time allocation for multiple peer-to-peer transmissions.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the

invention to provide the above teaching of Choi to Gandolfo, in order to have peer-to-

peer communication with the foreign terminal, so that the data can be transmitted

constantly without deteriorating.

Regarding claim 47, Gandolfo teaches the communications terminal of claim 20,

wherein the controller is further configured to determine whether the communications

terminal has been designated as a piconet edge terminal, and if so, enable the receiver

to detect the pilot signal *(Col 11, line 20-Col 12, line 7, especially Col 11, lines 31-40*

teaches in an indirect overlap situation, neither of the usable physical areas 550a and

550b of the two networks 505a and 505b overlap. Thus, none of the controllers 510a,

510b can learn about the existence and settings of the other network 505a, 505b either

directly from the other controller 510a, 510b, or through a device in the other network

505a, 505b. This is because each controller 510a, 510b cannot communicate with any

of the elements of the other network 505a, 505b. However, where there is an indirect

overlap, at least one controller-enabled device (designated as a piconet edge terminal)

from one of the networks 505a, 505b may be capable of forming a child network (i.e., a

network within an existing network) such that at least one device from the other existing

network 505a, 505b is within the usable physical area 560a, 560b of that child network.

Means edge terminal 522a enable to detect the pilot signal).

4.   Claims 7,12,26, and 31 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Gandolfo (US Patent #7,184,767) in view of Choi (US Patent

#6,967,944), and further in view of Watanabe et al. (US 2002/0080855).

Regarding claims 7 and 26, the combination of Gandolfo and Choi teach all the

claimed elements in claims 6 and 25. In addition, Gandolfo teaches the method/the

communication terminal wherein the establishment of the peer-to-peer (Col 5, lines 20-

24, ad-hoc) connection, but do not teach further comprises negotiating code to spread

peer-to-peer communications.

However, in related art, Watanabe teaches the method/the communication

device further comprises negotiating code to spread peer-to-peer communications

(Paragraph 0027). Therefore, it would have been obvious to one of ordinary skill in the

art at the time of the invention to provide the above teaching of Watanabe to Gandolfo

and Choi in order to perform frequency hopping using a plurality of frequency channels

having different frequencies and defined in a usable frequency band (Watanabe, See

abstract).

Regarding claims 12 and 31, the combination of Gandolfo and Choi fail to teach

the method further comprising spreading the received transmission with a code.

However, in related art, Watanabe teaches the method further comprising

spreading the received transmission with a code (Paragraph 0027). Therefore, it would

have been obvious to one of ordinary skill in the art at the time of the invention to

provide the above teaching of Watanabe to Gandolfo and Choi in order to perform

frequency hopping using a plurality of frequency channels having different frequencies and defined in a usable frequency band (Watanabe, See abstract).

5.   Claims 17 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gandolfo (US Patent #7,184,767) in view of Choi (US Patent #6,967,944), and further in view of Papasakellariou et al. (US Patent # 7,133,435).

6.   **Regarding claims 17 and 36,** the combination of Gandolfo and Choi fail to teach the method wherein the received transmission is spread with a first code, the method further comprising despreading the received transmission with the first code and spreading the received transmission with a second code.

        However, in related art, Papasakellariou teaches the method wherein the received transmission is spread with a first code, the method further comprising despreading the received transmission with the first code and spreading the received transmission with a second code (See claim 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the above teaching of Papasakellariou to Gandolfo and Choi in order to receive signals properly.

7.   Claims 44 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gandolfo (US Patent #7,184,767) in view of Choi (US Patent #6,967,944), and further in view of Icacono et al. (US Pub. No. 2005/0176468).

Regarding claim 44, the combination of Gandolfo and Choi fail to teach the

method, further comprising: determining that the strength of the pilot signal is above the

threshold; and registering as member of a piconet with the foreign terminal.

However, in related art, Icacono teaches the method, further comprising:

determining that the strength of the pilot signal is above the threshold; and registering

as member of a piconet with the foreign terminal (Paragraphs 0032,0034, and 0037).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the

invention to provide the above teaching of Icacono to Gandolfo and Choi in order to

communicate with the selected cell.

Regarding claim 45, the combination of Gandolfo and Choi fail to teach the

communications terminal, wherein the controller further configured to register as a

member of a piconet with the foreign terminal to support communications if the pilot

signal strength is above the threshold.

However, in related art, Icacono teaches the communications terminal, wherein

the controller further configured to register as a member of a piconet with the foreign

terminal to support communications if the pilot signal strength is above the threshold

(Paragraphs 0032,0034, and 0037). Therefore, it would have been obvious to one of

ordinary skill in the art at the time of the invention to provide the above teaching of

Icacono to Gandolfo and Choi in order to communicate with the selected cell.

Allowable Subject Matter

8.   Claim 48 is objected to as being dependent upon a rejected base claim, but

would be allowable if rewritten in independent form including all of the limitations of the

base claim and any intervening claims.

Regarding claim 48, the prior art of record fails to teach the communications

terminal of claim 47, wherein the controller is further configured to:

monitor an exchange of signaling messages pursuant to a call between a local

terminal in the piconet, and a remote terminal outside the piconet;

determine whether the call involves high-latency communications; and

if so, provide feedback relating to the call between the local terminal and the

remote terminal .

Response to Arguments

9.   Applicant's arguments with respect to claims 1,3-20,22-39, and 41-48 have been

considered but are moot in view of the new ground(s) of rejection.

Regarding claim 1, Applicant argues that combination of Gandolfo and Choi fail

to disclose or suggest all of the claimed features. The Examiner respectfully disagrees.

According to Figure 6C of Gandolfo, by an edge terminal 522a or 522b of the piconet

and engaging in intra-piconet communications between device A2-522a and B2-522b.

Col 11, lines 55-58, Gandolfo teaches regardless of which device 522a, 522b created

the child network, the two devices 522a and 522b communicate with each other via a

child wireless links 590. In abstract, Gandolfo teaches if they have indirect overlap (Fig

6C), one device from each network will together in a child network, and the controllers

will pass the network information via the devices in this child network. Col 12, lines 12-

20, lines 56-63, especially Col 12, lines 12-20 teaches regardless of the type of

overlap, while associated in a network 505a, 505b, each device 521a 523a, 521b 522b

should periodically be forced by its controller 510a, 510b to scan (listen) other channels

to determine if a better controller is available, e.g., one with more available bandwidth,

with a better QoS, with a better link quality, or with a lower transmit power). Devices

should also periodically be forced by its controller 510a, 510b to look for adjacent

networks (scanning pilot signal) and assume a proxy role with those networks if

possible. That means when controller 510a detects that receiving pilot signal from

device 522b is below the threshold, establishing a peer-to-peer (ad-hoc) connection with

its edge terminal 522a with the foreign terminal 522b in order to exchange messages. If

device 522b is inside the cell 550a, signal strength would be higher than threshold and

communication would be normal. Since device 522b located outside the cell 550a,

receiving signal strength of the pilot signal by controller 510a would be less than

threshold, so either devices 522a and 522b form child network and establish peer-to-

peer connection with each other in order to exchange messages from network 550a to

550b or vice versa. Further, Applicant argues the connection between elements 522a

and 522b of Gandolfo is not a peer-to-peer connection, but instead, a master-slave or

client-server connection, Where the elements 522a and 522b act as proxies for

controller elements. The Examiner respectfully disagrees. Col 5, lines 20-24, Gandolfo

teaches "Some of these objects are accomplished by way of discovering and updating

the wireless links between multiple wireless networks and building communication paths

across the multi-hop ad-hoc network", wherein ad-hoc network is a peer-to-peer

network. According to web address

https://www.novapublishers.com/catalog/product_info.php?products_id=5556, the

definition of ad-hoc network in lines 4-5: "The simplest ad hoc network is peer-to-peer

network". So communication between device A-2 522a and B-2 522b in figure 6C is

definitely peer-to-peer communication or mobile-to-mobile communication. Further,

Applicant argues that controller 510a does not receive pilot signal from a foreign

terminal, but instead receive a forwarded beacon message from controller 510b. The

Examiner respectfully disagrees. Col 12, lines 12-20 Gandolfo teaches regardless of

the type of overlap, while associated in a network 505a, 505b, each device 521a 523a,

521b 522b should periodically be forced by its controller 510a, 510b to scan (listen for

pilot signal) other channels to determine if a better controller is available, e.g., one with

more available bandwidth, with a better QoS, with a better link quality, or with a lower

transmit power). Devices should also periodically be forced by its controller 510a, 510b

to look for adjacent networks (scanning pilot signal) and assume a proxy role with those

networks if possible. Once the peer-to-peer connection is established, exchanging

messages with the foreign terminal. Applicant argues that Gandolfo does not disclose

exchanging messages with the foreign terminal if the pilot signal is below the threshold.

The Examiner respectfully disagrees. Col 11, lines 47-58: Gandolfo teaches regardless

of which device 522a, 522b created the child network, the two devices 522a and 522b

communicate with each other via a child wireless links 590, means exchanging

messages with the foreign terminal. In another word, when device 522b located outside

the cell 550a, receiving signal strength of the pilot signal by controller 510a would be

less than threshold, so either devices 522a and 522b form child network and establish

peer-to-peer (ad-hoc) connection with each other in order to exchange messages from

network 550a to 550b or vice versa. Moreover, Applicant argues that Choi does not

remedy any deficiencies in Gandolfo. The Examiner respectfully disagrees. Choi, Col 5,

lines 9-31, teaches the AP 14 updates the table to reflect the received signal strength

level for each active STA then newly allocates time allocation for all STAs. Based on the

updated information, the AP 14 can determine which stations are hidden from each

other. If the received signal quality degrades below a set limit, a subsequent frame

message from the AP 14 to the active STAs is transmitted to designate time allocation

for multiple peer-to-peer transmissions.

For the reasons as set forth above, the examiner contends that the rejection to

1,3-20,22-39, and 41-48 is proper.

Conclusion

10.   Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to DOMINIC E. REGO whose telephone number is

(571)272-8132. The examiner can normally be reached on Monday-Friday, 9:00 am-

5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Duc M. Nguyen can be reached on 571-272-7503. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

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USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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